

MONTHLY WEATHER REVIEW,

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(General Weather Service of the United States.)

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

INTRODUCTION.

In compiling the present REVIEW the following data, received up to March 14th, have been made use of, viz: the regular tri-daily weather charts, containing the data of simultaneous observations taken at 119 Signal Service stations and 11 Canadian stations, as telegraphed to this office; monthly journals and means, 126 and 145 respectively, from the former, and monthly means from 13 of the latter; reports from 26 special Sunset stations; 232 monthly registers from Voluntary Observers; 48 monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; monthly reports from Voluntary Observers in, and the local Weather Services of the States of Iowa and Missouri; reliable newspaper extracts; special reports.

BAROMETRIC PRESSURE.

Upon chart No. II is exhibited by the isobaric lines the general distribution of the atmospheric pressure, as reduced to sea-level, for the month. Compared with the means for February of previous years, those of the present month are decidedly above the normal on the Pacific coast from San Francisco northward, in the Northwest and over the Gulf States, but are about normal in the Atlantic States and Lake region.

The Local Barometric Ranges for the month, as reduced to sea-level, have been largest over New England and New York, and smallest along the Gulf coast and from the Rocky mountains westward. Taken by districts they vary as follows: New England, from 1.85 at Eastport to 1.55 at New Haven and 1.33 on summit of Mt. Washington; Middle Atlantic States, 1.63 at Albany to 1.11 at Norfolk; South Atlantic States, 1.00 at Charlotte to 0.61 at Jacksonville; Lake region, 1.52 at Rochester to 1.04 at Milwaukee; Ohio valley and Tennessee, 1.23 at Pittsburg to 0.88 at Chattanooga and 0.96 at Nashville; Gulf States, 0.35 at Key West to 0.71 at Montgomery, 0.74 at Indianola and 0.93 at Corsicana; the Northwest and Eastern slope of the Rocky mountains, 1.42 at Pembina to 0.98 at La Crosse, 1.26 at North Platte and 1.05 at Fort Sill; Rocky mountains, 0.50 at Cheyenne to 0.72 at Santa Fe and 0.74 at Pike's Peak; Western plateau, 0.55 at Winnemucca to 0.80 at Boise City; California 0.43 at Red Bluff to 0.62 at San Francisco.

Areas of High Barometer.—Nine are described below. Six of these first appeared north of Dakota or Minnesota, and moved south or east towards the Gulf or Atlantic coasts. Nos. II, VI and IX appeared over the Pacific States, over which region the pressure was above the normal on twenty-four days.

No. I—is a continuation of area No. XI, noticed in the *January Review*. It was central over the Northwest on January 30th and 31st, during which days a severe northerly snow-storm prevailed in central Nebraska. In consequence of this snow, remaining on the ground throughout the entire month of February, and the prevailing low temperatures, thousands of cattle are reported to have died on the plains. From February 1st to 3rd the highest pressure moved south-southeast to the Gulf of Mexico, and cool northwesterly winds, gradually backing to warmer west or southwest, prevailed west of the Mississippi. The minimum temperatures of the month prevailed in the South Atlantic States and Florida from the 2nd to the 4th. In Texas northeasterly winds, with cloudy and rainy weather, backed to warmer southerly on the 3rd, in advance of low pressure area No. II.

No. II—continued over Washington Territory and Oregon from the 1st to the 5th. During these days cool, clear weather and northerly winds generally prevailed throughout the Pacific States, excepting the rain in southern California on the 3rd and 4th, attending low area No. II. On the 4th the winds increased to brisk and high in the Sacramento valley, and on the 5th the pressure commenced falling north of Oregon, with southerly winds and by night light rains, in advance of low area No. IV. From the 5th to the 7th

the lowest temperatures of the month occurred from the Pacific coast to western Texas, and it is probable that this area of high pressure was transferred to the Southwest, in rear of low area No. II. The following minimum temperatures of the month were recorded: On the 5th, San Francisco, 43°; Los Angeles, 38°; Sacramento, 33°; Boise City, 9°; Pioche, 5°; Cheyenne, -6°, and Pike's Peak, -21°; on the 6th, at San Diego, 38°; Santa Fé, -3°, and Dodge City, 6°; and on the 7th, Fort Craig, N. M., 14°; Graham, Texas, 17°, and Galveston, 36°. During the 7th this area moved northeast to the Ohio valley, and on the 8th east off the Middle Atlantic coast.

No. III.—On the 7th and 8th the pressure rose over Manitoba, and on the latter day cold northerly winds spread southward to Kansas and Missouri. 9th, the highest pressure moved rapidly southeast, and by night extended from the Lower Lakes to the Middle and South Atlantic coast. 10th, it moved off the Atlantic coast, followed by easterly winds and increasing cloudiness in advance of low area No. IV.

No. IV.—followed in rear of low area No. V. 11th, was over Manitoba. 12th, centre moved south to Dakota and Minnesota, and northerly winds extended to the interior of Texas and Tennessee. 13th, was central in the Missouri valley, and a brisk norther commenced on the Texas coast. Cautionary Off-shore Signals ordered on the 12th at Indianola and Galveston were justified on the 13th and 14th by N. 36 and 32 respectively. 14th, moved into the Mississippi valley, and on the 15th passed east over the Atlantic States. The following minimum temperatures of the month attended this area: On the 12th, at Deadwood, Dak., -12°; 14th, North Platte, -13°; Corsicana, 23°; 15th, Cleveland, -2°; Knoxville, 11°; Vicksburg, 24°; Montgomery, 28°; New York, 8°, and Lynchburg, 17°.

No. V.—was north of Manitoba on the 15th, and on the 16th spread eastward north of the Lake region. 17th, moved east to the St. Lawrence valley, with very low temperatures in Ontario, the a. m. minimum at Rockliffe being -30°. High pressures and low temperatures continued over the Canadian Maritime Provinces until the morning of the 20th, during which day the barometer fell rapidly in advance of low area No. VI; the barometer at Halifax, N. S., fell from 30.32, at 7.35 a. m. (Washington time) of the 20th, to 28.90 at 7.35 a. m. of the 21st.

No. VI.—Higher pressures prevailed on the Pacific coast from the disappearance of the secondary depression attending low area No. IV to the 18th, with partly cloudy or cloudy weather and light rains from San Francisco northward. On the 19th and 20th the maps of departures from the normal show a decided excess, averaging about 0.30 of an inch, over Utah and New Mexico, and a rapid fall occurred during latter day in Washington Territory.

No. VII.—appeared over Manitoba on the 19th, and at 11 p. m. the pressure reached the maximum of the month (30.84 or 0.62 above normal) at Pembina, minimum a. m. temperature on the morning of the 20th, -37°. 20th moved south and east, and at 11 p. m. extended from the Lakes to the Gulf. 21st, the pressure fell over the Lake region and at 11 p. m. the highest pressure was over the South Atlantic States and Florida.

No. VIII.—appeared north of Montana on the 25th: was central over the Northwest on the 26th; over the Ohio valley and Lake region on the 27th, and over the St. Lawrence valley and Maine on the 28th. During the passage of the area the maximum pressures of the month occurred from the Lower Lakes eastward; and the following minimum temperatures of the month were recorded:—on the 26th at Pembina, -44°; Bismarck, -26°; Fort Gibson, 14°. 27th, Embarrass, Wis., -40°, mercury froze at daylight; Duluth, -26°; Port Huron, -5°. 28th, Burlington, -7°; Wood's Holl, 11°; on Mt Washington the minimum was -21°. At this station the minimum for the month (-23°) occurred on the 25th.

No. IX.—From the 21st to the 28th high pressures generally prevailed along the Pacific coast, except on the 23rd and 27th, on which days temporary depressions accompanied by heavy rains, existed over Washington Territory. Clear weather generally prevailed over California, and partly cloudy weather with occasional light rains, excepting the above, over Oregon and Washington Territory.

Areas of Low Barometer.—Nine well-defined areas of low pressure have appeared upon the tri-daily charts for the present month, and the tracks of the centres of seven of these depressions will be found on chart No. I. Of the two tracks not on the above chart, that of area No. I will be found on the International Chart of storm tracks. That of No. VII was considered too far north to appear on chart No. I. Areas Nos. IV and VII probably originated west of the Rocky Mountains; areas Nos. II, III, VI, VIII and IX over the eastern slope of the Rocky Mountains north of Wyoming, and area No. V over Utah or Colorado. This offers a strong contrast to February, 1878, during which month seven of the eleven areas of low pressure which appeared within the limits of the United States were traced from the Pacific Ocean, and six of these entered the States south of the 47th parallel. The daily charts made from the International (7:35 a. m., Washington time) simultaneous reports, received at this office, show the areas of low pressure over the North Pacific Ocean during that month to have moved slowly eastward, and to have extended much further south along the American coast than, in all probability, they usually do. During the present month high pressures have predominated over the Pacific States, and the area of low barometer has probably existed further north.

No. I.—From the 1st to the 3rd of the present month the pressure continued very low over the Canadian Maritime Provinces, due probably to the existing low pressures over the northern portion of the north Atlantic ocean and to the passage northeastward of low-pressure area No. XV, of the *January Review*: On the early morning of the 1st high northerly winds prevailed on the North Carolina coast, and brig "Maid of Llangollen" reported severe gale during the day within sight of the Bermudas. At Prospect, Bermuda, the pressure fell from about normal on the morning of January 31st to 29.65 at 9 a. m., February

1st; wind SW. 2d, barometer at Prospect, Bermuda, 9 a. m., 29.68. Very low pressures, brisk northwesterly winds and snow prevailed from Maine to Cape Breton. 3d, low but slowly rising pressure continued over Nova Scotia, Cape Breton and New Brunswick, with westerly winds and clearing weather. Cautionary Signals were ordered up at midnight of January 31st along the North Carolina and New Jersey coasts, and were justified by the following velocities: Kittyhawk and Cape Henry, NW. 42; Cape May, NW. 52 and Sandy Hook, NW. 46. On the afternoon of February 1st the above Signals were changed to Off-shore, and Cautionary Off-shore Signals were ordered up from New York to Eastport; these latter were justified by brisk to high northwest winds. The first portion of the track of this area will be found on chart No. I, accompanying the *January Review*, after which it probably crossed the ocean, as shown on the International chart of storm tracks.

No. II.—After the passage southward of high area No. I on the 1st the temperature rose rapidly over Wyoming and Montana, and partly cloudy weather, with light winds and calms, prevailed over this region until the morning of the 3d. 3d, southerly winds and rising temperature, with increasing cloudiness, prevailed from the Lower Missouri valley to Texas, and with rain during latter part of day from the Rio Grande valley to southern California; but from Wyoming and Montana to Minnesota the winds changed to colder northerly and a somewhat heavy snow-storm set in, which extended during the 4th southward to Utah, northern New Mexico and Kansas. These conditions gradually developed an extensive area of low pressure, the centre of which moved southward on the 3d, and on the morning of the 4th, a well developed barometric depression was central from Arizona to northwestern Texas, the barometers at Santa Fe and Fort Sill reading 29.37 and 29.63, respectively; or, about 0.35 inch. below the normal. Heavy rains fell during the early morning of the 4th in Arizona, and at 7:35 a. m. the area of precipitation extended from southern California to Wyoming, and thence to Texas and Mississippi. During the day increasing cloudiness followed by rain or snow, prevailed from the Gulf to the Lakes, and the centre of depression moved east to Arkansas. Cautionary Off-shore Signals were ordered at Indianola and Galveston at midnight of the 4th, and were justified on the morning of the 5th. Maximum velocities; Indianola, N. 37, and Galveston, N. 26. 5th, centre moved east the Ohio valley and Middle Atlantic States; the area of precipitation extended from the Gulf States to the Lakes and Atlantic coast, being heaviest in Tennessee and Kentucky and falling as snow north of a line drawn from Columbus, O., to Connecticut. Cautionary Signals ordered up along the coast from Smithville to New York on the morning of the 5th and changed to Off-shore on the afternoon were justified except at Cape Henry and Norfolk. Maximum velocities: Cape Lookout, SW. 40; Cape May, SE. and NW. 32, and Sandy Hook, N. 27. As this area passed east off the Atlantic coast the region of brisk to high winds was confined to a narrow belt lying between the parallels of 34 and 40; during the latter half of the 5th and morning of the 6th the pressure fell at the Bermudas, with rising temperature and southwest winds, and on the 6th steamer "Westbourne," lat. 39° N., 60° W., experienced a gale from SW. (hurricane) to NW., while to the northward easterly winds and squally weather were reported. The track of this area is prolonged on the International chart, as there is probably some connection between it and the area of very low pressure, which existed over the ocean east of the 40th meridian on the 9th.

No. III.—probably developed over Wyoming and Montana during the 6th and 7th, and moved almost directly east along the 45th parallel to Nova Scotia by midnight of the 9th. At 11 p. m. of the 6th, the lowest pressure of the week, (29.40 or 0.23 below normal,) occurred at Virginia City, Mont. 7th, southeast winds and light snow in Dakota. 8th, centre moved to Lake Huron; light snows fell from Minnesota to Ontario. Cautionary Signals were ordered at Milwaukee, Grand Haven and Ludington on the afternoon of the 8th and were justified; maximum velocities:—Milwaukee, NW. 31, and Grand Haven, SW. 28. 9th, moved east to Nova Scotia; brisk and occasionally high westerly winds and light snows, followed by clear weather from the Lower Lakes to New England. Cautionary Signals were ordered at Eastport on the morning of the 9th and were justified by a NW. gale which reached its maximum (43) at 10 a. m. of the 10th. Cautionary Off-shore signals were also ordered on the morning of the 9th along the New Jersey coast and were justified; maximum velocities:—Cape May, NW. 32, and Sandy Hook, NW. 36.

No. IV.—During the 7th and until afternoon of the 8th the pressure fell rapidly on the Pacific coast. 8th, brisk and occasionally high southerly winds, and heavy rains prevailed north of San Francisco; at 4:30 p. m. the lowest pressure (29.36, or 0.33 below normal) was recorded at Olympia. Heavy NE. winds, with three inches of snow, were reported at New Westminster, B. C., and at Victoria, V. I., a severe SW. gale prevailed. At night clearing and clear weather was reported at Portland and Olympia, and the lowest pressure probably moved eastward. Low pressures however continued over this region until the 12th, on the morning of which day a second minimum occurred at Olympia. Cloudy and rainy weather continued during these days from northern California to Utah and Idaho, with southerly winds, high temperatures and gradually increasing pressure. On the 11th, colder northerly winds, snow and rain prevailed in Washington Territory, and the observers at Westminster, B. C., and Victoria, V. I., report very heavy northerly snow-storms. 9th, lowest pressure was over Montana and Dakota. 10th, moved down the Missouri valley, preceded by southerly winds and rain in the Mississippi valley and eastern Texas, and followed by northerly winds, with snow from Montana and Wyoming to Lake Superior, and with clear, cooler weather from Nebraska to western Texas. In the latter State, a tornado occurred about 5 p. m., of which notice is made under the head of Local Storms. 11th, it moved to the Lower Lakes, and south to west winds and rain prevailed thence to the Gulf and Atlantic coasts; northerly winds and heavy snow, from the Upper Lake region to the St. Lawrence valley. 12th, moved down the St. Lawrence valley, with increasing energy. Heavy rains or snow prevailed, in advance of the centre, along the New England and Canadian coasts, and

St. Lawrence valley during first half of day. Heavy freshets resulted from Pennsylvania to New England, and in Canada railroad traffic was seriously impeded by snowdrifts. 13th, it probably passed northeastward over Labrador. Cautionary Signals, ordered on the afternoon of the 9th at Milwaukee, Grand Haven and Ludington; at 4:35 p. m. and midnight of the 10th from Smithville, N. C., to New York, and on the morning of the 11th, from New Haven to Eastport, were all justified; those along the Atlantic coast were changed to Cautionary Off-shore at midnight of the 11th or morning of the 12th. Maximum velocities, Milwaukee, N., 30; Grand Haven, N., 36; Smithville, SW., 31; Cape Lookout, SE., 38; Cape May, W., 36; Sandy Hook, NW., 46; New London, NW., 36; Boston, SW., 55 and Eastport S. 36.

No. V.—During the latter part of the 14th, on the 15th, and morning of the 16th, the lowest pressures were over Utah, Colorado and New Mexico, while on the Pacific coast and over the eastern section of the country the barometer was decidedly above normal, (see areas of high pressure Nos. V and VII.) Over this region the present area slowly developed, with cloudy weather and light snow. On the 16th, the centre moved southeast over Texas, and the area of rain or snow spread rapidly eastward to the southern portion of the Lake region, and South Atlantic coast. 17th, the centre moved off the coast of North Carolina and the area of precipitation spread over the Middle States and New England. Heavy rains fell in Tennessee and North Carolina, but from Kentucky and Virginia northward, except along the immediate coast south of Barnegat, the precipitation occurred as snow. 18th, northerly winds, rain or snow continued throughout the Atlantic States and Lower Lake region in advance of area of high pressure No. VI. Cautionary Signals ordered along the Atlantic coast from Smithville to New York on the afternoon of the 16th, from New Haven to Boston on the morning and at Portland and Eastport on the afternoon of the 17th; were all justified. Maximum velocities:—Cape Lookout, S. 32; Cape May, NE. 28; Sandy Hook, E. 37; Boston, N. 37, and Eastport, NE. 33.

No. VI—approached Manitoba from the northward on the 17th, and on the 18th moved east-southeast to southern Minnesota, accompanied by light snow. 19th, continued east-southeast to the Lower Lakes, and rain or snow extended south to Tennessee and east to New Jersey and New England. 20th, moved east over the Middle States and southern New England, with increasing energy. High northerly winds and gales prevailed along the coast from North Carolina to Maine, accompanied by a heavy snow-storm over New England and by clear and colder weather southwards. 21st, the pressure fell rapidly over Nova Scotia and Cape Breton, producing a very steep barometric gradient over the Canadian Maritime Provinces and Maine. At 4:35 p. m. the pressure at Halifax, N. S., had fallen to 28.75, or about 1.15 inches below normal, and at 11 p. m., at Sydney, C. B., to 28.50, or about 1.39 below the normal. Northeasterly backing to northwesterly gales and heavy snows prevailed over the Canadian Maritime Provinces and eastern Maine, and northwest gales, with clear, colder weather over the rest of New England. Cautionary Signals ordered on the morning of the 19th at Milwaukee, Grand Haven and Ludington, and at midnight of same day from Smithville, N. C., to Eastport were all justified. Those along the Atlantic coast, from Smithville to Sandy Hook, were changed to Cautionary Off-shore on the morning of the 20th, and from New York to Wood's Holl on the afternoon of same day. Maximum velocities: Milwaukee, NW. 28; Wilmington, NW. 37; Cape Lookout, NW. 44; Cape Henry, NW. 54; Cape May, NW. 56; Sandy Hook, NW. 48; Wood's Holl, E. 40 and NW. 48; Boston, NW. 40; and Eastport, NW. 52.

No. VII.—Falling barometer, southerly winds and rain, followed by rising barometer and northwest winds, prevailed in Oregon and Washington Territory during the 20th, and by midnight an area of low pressure was central north of Montana. 21st, it passed over Manitoba to north of Lake Superior, and thence during the 22d to north of the St. Lawrence. During the latter day high temperatures, cloudy weather and rain prevailed from the interior of the Gulf and South Atlantic States to Lake Erie, and thunder-storms occurred in the Lower Mississippi valley. 23d, it moved northeast to the north of the St. Lawrence. Clearing weather, with occasional light snows, prevailed from the Lake region to New England; and high temperatures, with rain and thunder-storms, followed at night by cooler, clearing weather, in the East Gulf and South Atlantic States. Cautionary Signals ordered on the morning of the 21st at Milwaukee, Grand Haven and Ludington, and along the Atlantic coast from Smithville, N. C., to Sandy Hook, were justified. Maximum velocities: Milwaukee, W. 36; Grand Haven, W. 50; Cape Lookout, SW. 27; Kittyhawk, SW. 30; Cape May, S. 33, and Sandy Hook, NW. 32. As the centre of depression continued to the north of our stations its track is not charted.

No. VIII.—appeared in the Upper Missouri valley on the 23rd and moved southeast to Missouri on the 24th. Clear or fair weather and high temperatures prevailed to the south and west of the centre, and the maximum temperatures of the month occurred at stations along the eastern slope of the Rocky mountains. Over the Lake region and the Northwest east to north winds prevailed, with low but rising temperatures, snow and sleet, gradually changing to rain in northern Illinois as the centre of depression approached. 25th, centre moved slowly east to Ohio. Southerly winds and high temperatures prevailed from the Ohio valley and Virginia southwards; light rains fell in Tennessee, Kentucky and the Virginias. North of the centre of depression snow or sleet prevailed, changing to rain along the southern shores of the Lower Lakes, with easterly winds from New England to Lake Ontario and northerly winds from Lake Erie westward. 26th, centre of depression moved northeast to the valley of the St. Lawrence; brisk to high southerly winds, with high temperatures and light rains, prevailed throughout the Atlantic States during the day, but changed to colder northwest during the night in advance of high area No. X. 27th, centre moved rapidly eastward over the Gulf of St. Lawrence, followed by brisk northwest winds and heavy rain, sleet or snow in Maine and New Brunswick. During the passage of this depression the following highest temperatures of the month

occurred at stations to the south of the centre: on the 24th, at Dodge City, 74°, Fort Gibson, 77°, and Denison, Tex., 78°; 25th, Shreveport, 80°, Montgomery, 73°, Chattanooga, 69°, Louisville, 65°, and Cleveland, 47°; 26th, Savannah, 74°, Wilmington, 73°, Fort Whipple and Philadelphia, 60°, Rochester, 46°, and Boston, 56°. The sudden fall of temperature in advance of high area No. X produced the largest daily ranges of the month at the majority of stations over the region traversed. Cautionary Signals ordered up at Milwaukee, Grand Haven and Ludington, and along the Atlantic coast from Smithville to New York, on the afternoon of the 24th; from New Haven to Boston on the morning and at Portland and Eastport at midnight of the 25th, were all justified. Maximum velocities—Milwaukee, NW., 34; Cape Lookout, NE., 44; Kittyhawk, NE., 50; Cape May, S., 40, and NW., 46; Sandy Hook, SE., 28; Wood's Holl, S., 48, and Portland, N., 36.

No. IX—was central over southwestern Montana and Wyoming on the 27th, with cloudy weather and high temperatures near or south of the centre, and cold easterly winds and snow in the Missouri and Mississippi valleys in rear of high area No. X. 28th, centre moved southeast to Iowa and thence to Wisconsin; cloudy or partly cloudy weather, with light rain or snow, prevailed thence to the Lake region; northerly winds, with snows, followed by clear weather, gradually spread southward to Kansas and Missouri. Cautionary Signals ordered up at Milwaukee, Grand Haven and Ludington on the morning, and along the Atlantic coast from Smithville, N. C., to New York on the afternoon of the 28th, were only justified at the Lake stations and on the North Carolina coast. Maximum velocities: Milwaukee, S. 30 and Cape Lookout, NE. 46.

INTERNATIONAL METEOROLOGY.

On chart No. IV are shown the probable tracks of storm-centres over the oceans, deduced from data received at this office up to February 8th; and in the upper right hand corner will be found an index to the same. In the upper left hand corner is a small table giving the approximate wind direction and probable maximum velocities (in miles per hour) attending the depressions on the dates given. Below is a brief notice of these, and also of some over the Southern Hemisphere.

Atlantic Ocean.—No. I, is a continuation of area No. VIII of the *January Review*; it probably moved rapidly east-northeast and developed into a severe storm on January 18th and 19th over the Middle Atlantic, after which it passed southeast over Spain. No. II, is a continuation of No. VII of *January Review*, and probably followed the track shown on chart in advance and to the north of the preceding area. No. III, is a continuation of area No. X of the *January Review*, and probably passed northward over Newfoundland. No. IV, is a continuation of area No. XII of the *January Review*, which moved east-northeast and on the 25th developed into quite a severe storm about lat. 54° N., long. 30° W. No. V, is a continuation of area No. XIII of the *January Review*; it passed northward on the 27th, being opposed by high pressures over the East Atlantic. No. VI.—Low pressures were indicated in the positions marked upon the chart on January 29th and 30th, and on February 2nd a "violent revolving storm," with tremendous sea, was reported in 43° N., 24' W.; this was probably near the centre of the low area which, on the 4th, passed southeastward over France. No. VII is a continuation of area No. I of the present REVIEW, which moved northeastward with increasing energy, and developed into a somewhat severe storm north of the 50th parallel. No. VIII is a continuation of No. II of the present REVIEW; it passed between the Bermudas and Nova Scotia on the 6th; on the 7th and 8th was attended over mid-ocean by rainy and squally weather, and on the 9th and 10th developed into a severe storm east of the 50th meridian; on the 11th it probably divided into two centres as shown. *South Atlantic Ocean.*—At Montevideo, December 31st, 1878, a heavy SW. gale, or "pampero," commenced, lasting until the morning of January 2nd, 1879; the barometer fell to its lowest level, 29.48, at 11 p. m., December 31st; the storm was preceded by NW. and N. winds, and accompanied by thunder, lightning and rain; the maximum velocity of wind was 65 miles per hour. On December 30th, in latitude 30° S., 28° W., a sharp shock of an earthquake was felt by the British ship "Coolen." *North Pacific Ocean.*—November 27th to 30th, from 38° N., 168° W. to 34° N., 176° W., fresh to strong westerly gales, with heavy seas, hail and sleet, lowest barometer, 29.50. January 15th, at 10 p. m., a thunder-storm passed over Yokohama attended with rain and hard squalls, during which the pressure fell to 29.61, wind SW., moderate gale. *South Pacific Ocean.*—November 13th, Bark Ophelia (from San Francisco to Queenstown) passed Pitcairn Island November 10th, and on the 13th entered a "heavy cyclone." *Victoria, Australia*, on September 24th and 25th, 1878, an area of low pressure passed over this colony, during which the barometer at Melbourne fell to 29.192 (or 0.827 below the average for September); it was accompanied by gales and squally weather, with thunder, lightning and hail showers. *Indian Ocean*, on December 15th, 1878, a cyclone, probably traveling southward, was encountered by the following vessels: Ship John O'Gaunt, lat. 20° S., long. 74° E., "hurricane"; Ship Charlotte Croom, 18° 49' S., 68° 23' E., "cyclone, barometer fell to 28.80"; Bark Dulcimer, 21° S., 73° E., "cyclone, beginning at ENE., veering to N. and ending at NNW., bad weather lasting 24 hours; Bark "Anglo-Norman," (left Amoy October 31, passed Cape of Good Hope, January 7th,) no date 20° S., 70° E., "cyclone travelling SSW., barometer 28.66, hove to 36 hours, under bare poles, terrific sea washing decks. *Bay of Bengal.*—No. I (see chart No. IV) probably formed over the Gulf of Martaban from November 12th to 17th; on the 17th the lowest pressure was southwest of Burmah, with E. gales and rain at Diamond Island; on the morning of the 21st it was east of Masulipatam, and heavy rains, with thunder and lightning from the E., prevailed along the coast northwards. The S.S. "Mira" (at Calcutta, Nov. 20th) reported bad weather from 10° N. 84° E. to 15° N. 86° E. No. II. On November 29th rain and moderate squalls were suspected to the south or southeast of Cape Negrais, with strong E. winds at Diamond Island;